

Claims

1. A method for testing an electromagnetic flowmeter having a measuring tube and a coil arrangement for generating a magnetic field perpendicular to the direction of flow through the measuring tube, the current direction in the coil arrangement being periodically changed, characterized in that after the change in the current direction at least one parameter of the current rise is determined and this is compared with a reference value.
2. A method according to claim 1, characterized in that testing is carried out during measurement of a throughflow.
3. A method according to claim 1 or 2, characterized in that the reference value is determined on the flowmeter itself at an earlier time.
4. A method according to any one of claims 1 to 3, characterized in that a time period that elapses between two predetermined current values is used as parameter.
5. A method according to any one of claims 1 to 4, characterized in that a time period that elapses between change-over of the current direction and reaching a predetermined current value is used as parameter.
6. A method according to any one of claims 1 to 5, characterized in that after change-over, a stepped-up voltage is used.

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7. A method according to any one of claims 1 to 6, characterized in that the supply voltage of the coil arrangement is regulated ratiometrically in relation to a reference voltage which is also used to determine the parameter.
8. A method according to any one of claims 1 to 7, characterized in that the curve shape of the current rise is used as parameter.
9. A method according to claim 8, characterized in that the curve shape is formed by current values ascertained at predetermined times.
10. A method according to any one of claims 1 to 9, characterized in that current rises following directly one after the other are compared with one another.
11. An electromagnetic flowmeter arrangement having a measuring tube, a coil arrangement for generating a magnetic field substantially perpendicular to the direction of flow through the measuring tube, an electrode arrangement substantially perpendicular to the direction of flow and to the magnetic field, a supply system for the coil arrangement, which has a current direction change-over arrangement, and a testing device, characterized in that the testing device comprises means (25, 46) which, after a change-over of the current direction, determine at least one parameter (T) of the rise in the current in the coil arrangement (3, 4, 30) and compare it with a given value.
12. An arrangement according to claim 11, characterized in that the testing device comprises a time-counter (25, 46) and a rise time (T) serves as parameter.
13. An arrangement according to claim 12, characterized in that the testing device comprises a comparator (20, 36), which compares the current or a variable derived therefrom with a given value and which is connected to the time-counter (25, 46).

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14. An arrangement according to claim 12 or 13, characterized in that the time-counter (25, 46) is connected to a checking unit which produces an error message whenever the time (T) ascertained differs by more than a predetermined difference from a given value.

15. An arrangement according to any one of claims 11 to 14, characterized in that in series with the coil arrangement (3, 4; 30) there is arranged an electrical resistance, the temperature-dependent resistance behaviour of which is inversely proportional to that of the coil arrangement (3, 4; 30).

16. An arrangement according to any one of claims 11 to 15, characterized in that a supplementary voltage supply system (44) is provided, which is connected to the supply system (32) by way of a change-over switch (33).

17. An arrangement according to any one of claims 11 to 16, characterized in that it comprises an analogue-to-digital converter (28), which determines the analogue values in relation to a reference voltage ( $V_{ref}$ ), the value of which is also used as starting point for determining coil current and coil supply voltage.

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